UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,732	12/07/2005	Yoji Ito	030662-116	9381

21839 7590 07/08/2008

BUCHANAN, INGERSOLL & ROONEY PC
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
BRIGGS, NATHANAEL R	

ART UNIT	PAPER NUMBER
2871	

NOTIFICATION DATE	DELIVERY MODE
07/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/520,732	ITO ET AL.	
	Examiner	Art Unit	
	NATHANAEL R. BRIGGS	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-11 and 13-22* is/are pending in the application.

4a) Of the above claim(s) *15-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-11,13,14 and 19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 2-5, filed 19 June 2008, with respect to claims 1 and 8 have been fully considered and are persuasive, particularly in that *Yokoyama* does not disclose wherein the discotic liquid crystal layer having a fluorine containing surface active agent is arranged in hybrid alignment, and in fact, teaches away from using the fluorine containing surface agent with discotic liquid crystals of hybrid alignment. The rejections of 19 December 2007 have been withdrawn. However, new rejections are presented in view of additional prior art.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 6-7, and 19-20 are rejected under 35 U.S.C. 103(a) as being obvious over Aminaka (US 6,064,457) in view of Murayama et al. (US 6,778,242).

4. The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject

matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

5. Regarding claim 1, Aminaka discloses an LCD (see figures 3-8, for instance) having a liquid crystal cell (10) of bend alignment mode and a pair of polarizing plates (34A, 34B) provided on both sides of the cell (10), wherein at least one of the polarizing plates (34A, 34B) comprises a polarizing membrane (34) and an optical compensatory film (31,33) positioned nearer to the liquid crystal cell (10) than the polarizing membrane (34), said optical compensatory film (31, 33) having at least two optically anisotropic layers comprising first (31A) and second (33A) optically anisotropic layers, said first optically anisotropic layer (31A) being made from discotic compounds (31a-e) oriented in hybrid alignment (column 12, lines 20-21), said second optically anisotropic layer (33A) consisting of a cellulose ester film (column 20, lines 42-46), and said polarizing membrane (34) and said first (31A) and second (33A) optically anisotropic layers being so placed that thefirst optically anisotropic layer (31A) giving in plane the maximum refractive index in a direction (RD1) of essentially 45° to a transmission axis (TA1) in plane of the polarizing membrane (34), and that the second optically anisotropic layer

(33A) gives in plane the maximum refractive index in a direction (SA1) essentially parallel or perpendicular to a transmission axis (TA1) in plane of the polarizing membrane (34), and wherein the liquid crystal cell of bend alignment mode (10) and the first (31) and second (33) optically anisotropic layers have optical characteristics satisfying the following formula (1) when measured at any wavelength of 450 nm, 550 nm and 630 nm: $0.05(\Delta n \cdot d)/(Re1 \cdot Rth2)<0.20$ (1); (using the values $\Delta n \cdot d = 365.56$, see column 27, lines 28-31; Re1 = 38 nm (example 1); Rth2 = 100 nm (example 1) yields a $(\Delta n \cdot d)/(Re1 \cdot Rth2) = 0.0962$) in which Δn is an inherent birefringent index of rod-like liquid crystal molecules in the liquid crystal cell (10); d is a thickness of a liquid crystal layer (10) in the liquid crystal cell in terms of nm; Re1 is a retardation value in plane of the first optically anisotropic layer (31); and Rth2 is a retardation value along a thickness direction of the second optically anisotropic layer (33). However, Aminaka does not expressly disclose wherein the first optically anisotropic layer further contains a fluorine-containing polymer in the range of 0.005 to 8 wt. % based on the amount of components of a coating solution other than a solvent, and thereby wherein the optical compensatory film gives retardation values Re(0°), Re(40°), and Re(-40°) at 546 nm in the ranges of 30 ± 10 nm, 50 ± 10 nm and 115 ± 10 nm, respectively, wherein values Re(0°), Re(40°) and Re(-40°) are retardation values of the optical compensatory film when the retardation is measured, in a plane including the normal of the film and the direction in the film plane the minimum refractive index of the optical compensatory film, in the directions inclined at 0°, 40° and reversely 40° from the normal to the plane, respectively.

6. Regarding claim 1, Murayama discloses an optical compensatory sheet (see figure 6, for instance), having discotic liquid crystal molecules as the first anisotropic layer (53), wherein the first optically anisotropic layer further contains a fluorine-containing polymer (column 42, lines 6-18) in the range of 0.005 to 8 wt. % (see MPEP § 2144.05 for doctrine of overlapping ranges) based on the amount of components of a coating solution other than a solvent. In addition, with this structure, as identical to that of claim 1 of the present application, it can be expected that the optical compensatory film gives retardation values Re(0°), Re(40°), and Re(-40°) at 546 nm in the ranges of 30 ± 10 nm, 50 ± 10 nm and 115 ± 10 nm, respectively, wherein values Re(0°), Re(40°) and Re(-40°) are retardation values of the optical compensatory film when the retardation is measured, particularly in light of the viewing angles presented in the table of column 47 of Murayama, in a plane including the normal of the film and the direction in the film plane the minimum refractive index of the optical compensatory film, in the directions inclined at 0°, 40° and reversely 40° from the normal to the plane, respectively, as confirmed in the affidavit filed by Applicant on 27 September 2007.

7. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the fluorine surface agent of Murayama in the optical compensation layer of Aminaka. The motivation for doing so would have been to maintain consistent discotic hybrid alignment to improve display in an LCD of bend alignment mode, as taught by Murayama (column 3, lines 26-30; column 41, lines 24-34). Claim 1 is therefore unpatentable.

8. Regarding claim 2, Aminaka in view of Murayama discloses the LCD as defined in claim 1 (see Aminaka figures 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the $\Delta n \cdot d$ satisfies the following formula (2) when measured at any wavelength of 450 nm, 550 nm and 630 nm: 100 nm1,500 nm. (2) (see above). Claim 2 is therefore unpatentable.

9. Regarding claim 3, Aminaka in view of Murayama discloses the LCD as defined in claim 1 (see Aminaka figures 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the Re1 satisfies the following formula (3) when measured at any wavelength of 450 nm, 550 nm and 630 nm: 10 nm <Re1<50 nm. (3) ([0454]). Claim 3 is therefore unpatentable.

10. Regarding claim 4, Aminaka in view of Murayama discloses the LCD as defined in claim 1 (see Aminaka figures 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the Rth2 satisfies the following formula (4) when measured at any wavelength of 450 nm, 550 nm and 630 nm: 70 nm <Rth2<400 nm. (4) (Table 1). Claim 4 is therefore unpatentable.

11. Regarding claim 6, Aminaka in view of Murayama discloses the LCD as defined in claim 1 (see Aminaka figures 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the direction (perpendicular to SA) giving in the film plane the minimum refractive index of the optical compensatory film is essentially at 45° to a longitudinal direction (RD) when the optical compensatory film is produced. Claim 6 is therefore unpatentable.

12. Regarding claim 7, Aminaka in view of Murayama discloses the LCD as defined in claim 1 (see Aminaka figures 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the optical compensatory film (131,133) and the polarizing membrane (134) are laminated by attaching the film in the form of a roll to the membrane in the form of a roll ([0750]). Claim 7 is therefore unpatentable.

13. Regarding claim 19, Aminaka in view of Murayama discloses the LCD as defined in claim 1 (see Aminaka figures 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the fluorine-containing polymer has a weight average molecular weight of 3,000 to 100,000. Claim 19 is therefore unpatentable.

14. Regarding claim 20, Aminaka in view of Murayama discloses the LCD as defined in claim 1 (see Aminaka figures 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the fluorine-containing polymer is a copolymer comprising fluorine-containing repeating units and units derived from polyoxyalkylene (meth)acrylate. Claim 20 is therefore unpatentable.

15. Claims 8-11, 13-14, and 21-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Aminaka (US 6,064,457) in view of Watanabe (US 6,034,755) and in further view of Murayama et al. (US 6,778,242).

16. The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an

invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

17. Regarding claim 8, Aminaka discloses an LCD of reflection type (see figures 1 and 4-8, for instance) and a polarizing plate (34A,B)in order, wherein the polarizing plate (34A,B) comprises a polarizing membrane (34) and an optical compensatory sheet (31, 33) positioned nearer to the liquid crystal cell (10) than the polarizing membrane (34), said optical compensatory sheet (31, 33) having at least two optically anisotropic layers comprising first (31A) and second (33A) optically anisotropic layers, said first optically anisotropic layer (31A) being made from discotic compounds (31a-e) oriented in hybrid alignment (column 12, lines 20-21), said second optically anisotropic layer (33A) consisting of a cellulose ester film (column 20, lines 42-46), and said polarizing membrane (34) and said first (31A) and second (33A) optically anisotropic layers being so placed that the first optically anisotropic layer (31A) giving in plane the maximum refractive index in a direction (RD1) of essentially 45° to a transmission axis (TA1) in plane of the polarizing membrane (34), and that the second optically anisotropic layer

(33A) gives in plane the maximum refractive index in a direction (SA1) essentially parallel or perpendicular to a transmission axis (TA1) in plane of the polarizing membrane (34), and wherein the liquid crystal cell of bend alignment mode (10) and the first (31) and second (33) optically anisotropic layers have optical characteristics satisfying the following formula (1) when measured at any wavelength of 450 nm, 550 nm and 630 nm: $0.05(\Delta \bullet n \cdot d)/(Re1 \cdot Rth2)0.20$ (1); (using the values $\Delta n \cdot d = 365.56$, see column 27, lines 28-31; Re1 = 38 nm (example 1); Rth2= 100 nm (example 1) yields a $(\Delta \bullet n \cdot d)/(Rel \cdot Rth2) = 0.0962$) in which Δn is an inherent birefringent index of rod-like liquid crystal molecules in the liquid crystal cell (10); d is a thickness of a liquid crystal layer (10) in the liquid crystal cell in terms of nm; Re1 is a retardation value in plane of the first optically anisotropic layer (31); and Rth2 is a retardation value along a thickness direction of the second optically anisotropic layer (33). However, Aminaka does not expressly disclose a reflection board and a liquid crystal cell of hybrid alignment mode; or wherein the first optically anisotropic layer further contains a fluorine-containing polymer in the range of 0.005 to 8 wt. % based on the amount of components of a coating solution other than a solvent, and thereby wherein the optical compensatory film gives retardation values Re(0°), Re(40°), and Re(-40°) at 546 nm in the ranges of 30 ± 10 nm, 50 ± 10 nm and 115 ± 10 nm, respectively, wherein values Re(0°), Re(40°) and Re(-40°) are retardation values of the optical compensatory film when the retardation is measured, in a plane including the normal of the film and the direction in the film plane the minimum refractive index of the optical compensatory film

in the directions inclined at 0°, 40° and reversely 40° from the normal to the plane, respectively.

18. Regarding claim 8, Watanabe disclosed a hybrid alignment LCD having a reflecting plate (column 1, lines 63-65).

19. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the reflective HAN mode LCD of Watanabe in the LCD of Aminaka. The motivation for doing so would have been to use conventional and similar technologies in the art to achieve wide viewing angle, as taught by Watanabe (column 1, lines 66-67; column 2, line 1).

20. Regarding claim 8, Murayama discloses an optical compensatory sheet (see figure 6, for instance), having discotic liquid crystal molecules as the first anisotropic layer (53), wherein the first optically anisotropic layer further contains a fluorine-containing polymer (column 42, lines 6-18) in the range of 0.005 to 8 wt. % (see MPEP § 2144.05 for doctrine of overlapping ranges) based on the amount of components of a coating solution other than a solvent. In addition, with this structure, as identical to that of claim 1 of the present application, it can be expected that the optical compensatory film gives retardation values Re(0°), Re(40°), and Re(-40°) at 546 nm in the ranges of 30 ± 10 nm, 50 ± 10 nm and 115 ± 10 nm, respectively, wherein values Re(0°), Re(40°) and Re(-40°) are retardation values of the optical compensatory film when the retardation is measured, particularly in light of the viewing angles presented in the table of column 47 of Murayama, in a plane including the normal of the film and the direction in the film plane the minimum refractive index of the optical compensatory film, in the

directions inclined at 0°, 40° and reversely 40° from the normal to the plane, respectively, as confirmed in the affidavit filed by Applicant on 27 September 2007.

21. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the fluorine surface agent of Murayama in the optical compensation layer of Aminaka in view of Watanabe. The motivation for doing so would have been to maintain consistent discotic hybrid alignment to improve display in an LCD of bend alignment mode, as taught by Murayama (column 3, lines 26-30; column 41, lines 24-34). Claim 1 is therefore unpatentable.

22. Regarding claim 9, Aminaka in view of Watanabe and in further view of Murayama discloses the LCD as defined in claim 8 (see Aminaka figures 1 and 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the $\Delta n \cdot d$ satisfies the following formula (6) when measured at any wavelength of 450 nm, 550 nm and 630 nm: $50 \text{ nm} < \Delta n \cdot d < 750 \text{ nm}$. (6) (see above). Claim 9 is therefore unpatentable.

23. Regarding claim 10, Aminaka in view of Watanabe and in further view of Murayama discloses the LCD as defined in claim 8 (see Aminaka figures 1 and 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the Re1 satisfies the following formula (7) when measured at any wavelength of 450 nm, 550 nm and 630 nm: $10 \text{ nm} < Re1 < 50 \text{ nm}$. (7) (column 11, lines 32-38). Claim 10 is therefore unpatentable.

24. Regarding claim 11, Aminaka in view of Watanabe and in further view of Murayama discloses the LCD as defined in claim 8 (see Aminaka figures 1 and 4-8;

Murayama figure 6, for instance), and Aminaka further discloses wherein the Rth2 satisfies the following formula (8) when measured at any wavelength of 450 nm, 550 nm and 630 nm: 70 nm < Rth2 < 400 nm. (8) (column 11, lines 45-49). Claim 11 is therefore unpatentable.

25. Regarding claim 13, Aminaka in view of Watanabe and in further view of Murayama discloses the LCD as defined in claim 8 (see Aminaka figures 1 and 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the direction giving in the film plane the minimum refractive index of the optical compensatory film is essentially at 45° to a longitudinal direction when the optical compensatory film is produced. Claim 13 is therefore unpatentable.

26. Regarding claim 14, Aminaka in view of Watanabe and in further view of Murayama discloses the LCD as defined in claim 8 (see Aminaka figures 1 and 4-8; Murayama figure 6, for instance), and Aminaka further discloses wherein the optical compensatory film and the polarizing membrane are laminated by attaching the film in the form of a roll to the membrane in the form of a roll (column 3, lines 1-20). Claim 14 is therefore unpatentable.

27. Regarding claim 21, Aminaka in view of Watanabe and in further view of Murayama discloses the LCD as defined in claim 8 (see Aminaka figures 1 and 4-8; Murayama figure 6, for instance), and Murayama further discloses wherein the fluorine-containing polymer has a weight average molecular weight of 3,000 to 100,000. Claim 21 is therefore unpatentable.

28. Regarding claim 22, Aminaka in view of Watanabe and in further view of Murayama discloses the LCD as defined in claim 8 (see Aminaka figures 1 and 4-8; Murayama figure 6, for instance), and Murayama further discloses wherein the fluorine-containing polymer is a copolymer comprising fluorine-containing repeating units and units derived from polyoxyalkylene (meth)acrylate. Claim 22 is therefore unpatentable.

Conclusion

29. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHANAEL R. BRIGGS whose telephone number is (571)272-8992. The examiner can normally be reached on 9 AM - 5:30 PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathanael Briggs
6/27/2008

/Andrew Schechter/
Primary Examiner, Art Unit 2871